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ABSTRACT

A study examined vocational education research and development (R&D) during the period from 1963 to 1983. Individually funded and government-funded R&D efforts in the following 15 categories were compared: career development and guidance, special populations, students, personnel, instructional techniques, curriculum development, demography, equity, labor market supply and demand information, administration, evaluation of vocational education programs, job site, employment and training, articulation, and dissemination and demonstration. Relative frequencies of R&D efforts in each of these categories, referred to as "level of effort" (LOE), were calculated for each year. Graphic comparison of the LOEs of each of the 15 categories revealed that in 14 of the 15 categories, over 50 percent of the data entries fall at or below the 11 percent mark. In seven of the categories, over 50 percent of the data entries showed zero R&D activity. Indirect evidence from the study supported the contention that Federal regulatory processes contribute to the short life of R&D trends. This conclusion seemed to be particularly supported by the data concerning the years 1971 through 1974. (Graphs comparing the government and individual LOEs in each of the 15 categories are appended.) (MN)

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Where We've Been in Vocational Education Research: A "Geologic Survey"

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For presentation at the American Educational Research Association Annual Meeting
April 4, 1985

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Where We've Been in Vocational Education Research: A "GeologicSurvey"

Where have we been? I asked this question to seven vocational education researchers, first among equals in our field. Their response was, "We know research has been done, much of it of questionable value, most of it after 1963, and we doubt that anyone has studied the trends represented by whatever research has been done." To the best of my knowledge, no one has studied past trends in vocational education research. And I know why: it is a bear to locate the research in a form from which conclusions can be drawn concerning its purposes, methods, and conclusions.

Where have we been? This question begs the response, "Who cares!" Except to those souls who find the question intellectually interesting, even if a mere intellectual minuet in its pursuit, this exclamation requires a valid response in vocational education research, a service area to vocational education, itself a "practical discipline" involved with "practical problems" (Copa, n.d.). Power--not muscle as much as the control of resources to accomplish one's ends--is the essence of all change. To me, the essence of the response to "Who cares" and the raison d'etat for the pursuit of past trends in vocational education research is this concept of power; research seeks description of resource allocation and use in order that prescription for change is able to occur.

Where have we been in vocational education research? In defining the substantive parameters of "research" for the present investigation, I was reminded of Lewis Carroll's (1960) Humpty Dumpty:

> "When I use a word," Humpty Dumpty said...,"it means just what I choose it to mean--neither more nor less."
> "The question is," said Alice, "whether you can make words mean so many different things."
> "The question is," said Humpty Dumpty, "which is to be master--that's all." (emphasis in the original)

Indeed, my choice to study "vocational education research and development" was one bred of necessity. My decision to study the twenty-year period, 1963 to 1983, lead me to data sources which spoke about "research," but described projects that ran the gamut from fundamental inquiry interested in empirical description and/or theory-building to the development and testing of useable vocational education products.

Methodology

I chose to study vocational education R&D during the period 1963 to 1983 because in my salad days as an investigator of trends in vocational education R&D I was advised that little genuine research had occurred before passage of the Vocational Education Act of 1963. Now, as a "harden," yet still intrepid, analyst of trends, I say, "Poppycock!" to this advice, but too late for the task at hand. Dissertation Abstracts, for one, belies the initial advice.

The Fields

I divided vocational education R&D into two broad fields: individual R&D and government R&D. Each of these fields contained two sub-fields. Individual R&D was comprised of those data sources concerned with the activities of individual researchers qua individuals: dissertation R&D was the sub-field which included Dissertation Abstracts (n.d.), University of Illinois (n.d.) (a ten-percent, random sample in five-year intervals, beginning with 1963, was drawn from each of the two, preceding data sources) and the Journal of Industrial Teacher Education (a ten-percent, random sample from published lists of dissertations, 1964, 1965, 1969); journal R&D (individual R&D's second sub-field) included the Journal of Vocational Education Research (every issue) and the Journal of Industrial Teacher Education (two-thirds of the 1963, 1965, 1969, and 1970 issues).

Government R&D was comprised of data sources concerned with R&D activities funded under federal vocational education statutes. State R&D, one of the two sub-fields of government R&D, included data from Budke (1980 through 1983) (problem/priority areas tables, 1978 through 1982), Resources in Vocational Education (n.d.) (ten-percent, random sample, 1978 through 1983), Committee on Vocational Education Research and Development (1976) (passim), and Advisory Council on Vocational Education (1968) (passim). Federal R&D, the second sub-field, included Gordon et al (1979, 1980)/The National Center Clearinghouse (1981 through 1983) ("Subject Index" and ten-percent, random sample from "Project Resumes" section, 1978 through 1982), Committee on Vocational Education Research and Development (1976) (passim), and Advisory Council on Vocational Education (1968) (passim).

Data Collection: The Categories

These data sources were analyzed by year using the Committee on Vocational Education Research and Development's (1976) list of nine major research categories. The ERIC descriptors used by Resources in Vocational Education (n.d.) and Gordon (1979, 1980)/The The National Center Clearinghouse (1981 through 1983) were placed under the proper category/categories. In the course of this research, the nine categories were expanded to fifteen: Career Development and Guidance, Special Populations, Students, Personnel, Instructional Techniques, Curriculum Development, Demography, Equity, Labor Market Supply and Demand Information, Administration, Evaluation of Vocational Education Programs, Job Site, Employment and Training, Articulation, and Dissemination/Demonstration/Change. Each identified piece of R&D was placed under the appropriate descriptor(s) within the relevant category/categories using a data form identified by year and data source (and, therefore, by field).

Analysis

Level of Effort

The data sources were tallied by category for each year. Relative frequencies (category/total sub-field effort for that year) were computed. These frequencies are referred to as "level of effort" or LOE in this paper's discussion.

Graphs

Controlling by category, graphs were created by plotting each data source's LOE by year and connecting the points. "Trend lines" (linear regression [Becker, 1984]) were computed and plotted for each created data line which was: at least somewhat linear; not horizontal; and had data entries entered in a consistent sequence--i.e., yearly for several years (Budke [1980 through 1983] and Gordon [1979 and 1980]/The National Center Clearinghouse [1981 through 1983]) or every five years (Journal of Vocational Education Research [1976 through 1983]).

"Geological Survey"

The graphs were analyzed using a geological/geographical metaphor as a personal heuristic. Even a quick study of the graphs demonstrates why. These metaphors were constructed as "playthings" to assist me in viewing the graphs with a more creative eye. Each metaphor is exclusive to the instance in which it is used. No wholistic intent across the categorical analyses is intended.

Limits/Delimits

The following analysis uses terms such as "mild," "moderate," "strong," "weak," and "low". These terms are used loosely, for "flavor". They signal my interpretation of the relative level of import of the LOE or trend line in question.

Quantity of projects was counted. Therefore, a megabuck project and a minibuck one are equally weighted. No judgments concerning internal quality of the R&D or of its usefulness/useability were made.

No "Why's" are offered. Human resources consulted and paper resources studied in the course of this inquiry were fond of blaming the desultory priority-setting behavior of the federal government for the short-lived trends in vocational education R&D. Yet, these same sources admitted that no one has tracked vocational education R&D (as compared to vocational education priorities). I believe we need some description of the trends themselves before we can attach reasons to these trends.

While the fields of analysis are conceptually clear, the empirical clarity is clouded by my inability to collect data within the fields in a consistent way across the years. Comparisons and conclusions would be more valid and less tentatively held if all the data could have been collected from all the sources for the same years.

Furthermore, this inconsistency in data collection results in graphic presentations whose "geological" characteristics are to some degree artifacts of the data collection problem. Therefore, the conclusions drawn from the graphs must be considered as exploratory and tentative.

The Trends

The Lay of the Land

Life in the Low Lands.-- Analysis of the fifteen categories results in the characterization that dispite the presence of moderate "topographical" relief,

we are studying life in the flat, low lands. In fourteen of the fifteen categories (ninety-three percent), over fifty percent of the data entries fall at or below the eleven-percent level of effort [LOE]: in seven of the categories, by category, over fifty percent of the data entries showed zero R&D activity, while in an additional seven categories, over fifty percent of the data entries fall at or below the eleven-percent LOE. Fifty percent of the final category's data entries were aggregated at or below the twenty-five percent LOE.

Shard Phenomenon.--As was discussed earlier under "Limits/Delimits", human and paper resources were fond of blaming desultory, federal priority-setting processes for short-lived, vocational education R&D trends. Certainly, the degree of influence regulatory processes have over R&D LOE is a vital question in need of a response. The indirect evidence from this study would support the contention that regulatory processes contribute to the short life of R&D trends. In six of the categories the effect is so graphic that I have used the term "shard phenomenon" to describe it. In 1972 and 1973, fourteen of the fifteen categories displayed zero federal R&D LOEs. Eight of these categories also exhibited zero federal R&D LOEs in 1971 and 1974. In 1971 and/or 1974, the other six categories' federal LOEs rose sharply with the result that their curve for the four years looks like a shard. I speculate that federal priority-setters were highly focused (if only for the short term) as well as desultory during these four years.

Plate-Techtonics: Job Site

Category Descriptors

(Worker Characteristics)

auto mechanics (occupation)
blue collar [sic] occupations
cooperation
employees
employment experience
employment patterns
entry workers
housewives
job analysis
job skills
nontraditional occupations
recruitment
social structure
work attitudes

employer attitudes

techrological advancement

Discussion

Over fifty percent of this category's data entries fall at or below the one percent LOE. Dispite this flat and low relief, the job site category, along

with employment and training, are two of the more "trendy" groups. The plates are moving within this landscape, transforming it from a flat, low one to one with a rising relief.

Individual researchers were more engaged in R&D in this area than were governmental researchers. The movement of the LOE was relatively parallel between dissertations and journals, but the dissertations were operating at an approximately ten percent higher LOE than the journals.

Governmental R&D showed weak movement and low LOE, especially relative to individual R&D. Federal and state efforts ran parallel to each other, almost merging. The mild positive trend line (.8) of the federal R&D demonstrates that federal activities are awakening--the plates are moving, building relief from the low and flat terrain. The state efforts appear moribund: a mild, negative trend line (-.3) combined with a decline of LOE to zero in 1983 suggests such a conclusion. The interpretation of weak governmental movement relative to individual R&D is enhanced by the total lack of interest of governmental R&D in the 1960's and 1970's (zero LOE).

Individual research and development as well as federal are on the move--the plates are active. State efforts apparently are moribund. Dissertation research is especially active: dissertations in the job site category have been in evidence since 1963: journals showed evidence of R&D in this area beginning in 1969; governmental R&D only in 1978. Furthermore, comparison of the final dissertation LOE with those of journals and government demonstrates a forty-eight percent LOE difference between dissertations and journals, a fifty-five point difference with federal R&D and a fifty-eight point difference with state activities. All of these discrepencies favor dissertations.

Plate-Techtonics: Employment and Training

Category Descriptors

CETA
industry education [sic] labor councils
youth employment
Youth Employment and Demonstration Projects Act
Youth Employment and Training Program

Discussion

Over fifty percent of this category's data entries show no R&D activities--i.e., zero LOE. As was mentioned in the job site discussion, employment and training, along with job site are two of the more "trendy" categories. As with job site, the plates are moving within this terrain, transforming it from a flat, low landscape to one with a rising relief. The difference between this category of R&D and job site is that this category appears to be in an earlier stage of movement comparible to the movement in the job site category.

Individual R&D is merged at zero until 1973, at which point dissertations begin to reflect employment and training concerns. Journal R&D lies dormant until 1978, when it, too, becomes active and begins an increasing LOE which runs in a

parallel slope to dissertation R&D, only four percent below it. Individual R&D is more engaged in this form of R&D than is government R&D.

Government R&D shows weak movement and low LOE, especially relative to individual R&D. The mild, positive trend line (.28) of federal R&D, in conjunction with the dormancy of federal R&D until 1978, demonstrates that federal activities appear to be awakening. State R&D appears moribund: accept for a brief show of low LOE activity in the early 1970's, no evidence of state activities since 1963 is present.

While none of the fields here match the surge evident for dissertation R&D in the job site category, individual R&D's and federal R&D's plates <u>are</u> active, with individual R&D's LOE increasing more rapidly than is the LOE of the federal effort. None of the active R&D fields demonstrate a high LOE.

Genesis: Articulation

Category Descriptors

(Within Education and Training)

articulation (program)
clearinghouses
college cooperation
coordination
dual enrollment
educational cooperation
educational coordination
interagency cooperation
interagency coordination
interinstitutional cooperation
program coordination
regional cooperation
regional planning
regional programs
government school [sic] relationship
state school district [sic] relationship
youth employment

(Between Education and the Community)

citizens councils
community cooperation
community involvement
community organizations
community resources
consortia
family involvement
family school [sic] relationship
parent participation
parent school [sic] relationship
school community [sic] cooperation
school community [sic] programs
school community [sic] relationship

youth opportunities

(Betwen Education and Business/Industry/Labor)

business
cooperative planning
cooperative programs
coordination
economic development
education and work [sic] councils
education work [sic] relationship
industry education [sic] labor councils
job development
labor
labor education
labor unions
productivity
school business [sic] relationship
school industrial [sic] relationship
school supervision

(Among Multiple Tyoes of Societal Institutions)

agency cooperation
communications
cooperation
coordination
institutional cooperation

Discussion

Over fifty percent of this category's data entries show no R&D activities--i.e., zero LOE. Dispite this overall flat and low relief, Articulation, along with Dissemination/Demonstration/Change, are two of the more "trendy" groups. In these two categories, the terrain was dormant from the first year investigated, "suddenly" showing life in 1978.

Concerning the individual R&D field, dissertation R&D became active in 1978 and shows a moderate, positive trend line (2.2). Its LOE increased from zero to eleven percent between 1978 and 1983. On the other hand, journal R&D shows no evidence of life for the entire twenty-year span investigated.

Federal R&D displays a moderate, positive trend line (2) with an LOE (rising from six to thirteen percent between 1978 and 1982) always one to ten percent higher than either dissertation R&D or state R&D. While the LOE of state R&D appears to have held steady at about four percent since becoming active in 1978, the trend line for this field is actually mildly negative (-.03).

R&D in the area of Articulation is a growing "land mass" in two fields--dissertation R&D and federal R&D. The LOEs of both are growing at a relatively equal and parallel pace, with federal R&D four to six percent above dissertation R&D. State R&D seems never to have prioritized articulation beyond its 1978 LOE. Journal R&D appears to have not recognized articulation as of sufficient import to create even a rumbling in the statistics.[1] Thus, the

1. Actually, a rumble in journal R&D was "heard" in 1977 (an unplotted year) when seven percent of the articles studied concerned themselves with articulation.

- LOEs of R&D in the dissertation and federal fields are building an increasing discrepancy between themselves and the LOEs of journal R&D and state R&D. Nonetheless the LOE's of all the fields are low.

Genesis: Dissemination/Demonstration/Change

Category Descriptors

demonstration centers
demonstration programs
demonstration projects
diffusion
educational change
educational improvement
educational service centers
information centers
information dissemination
information networks
information processing
information retrieval
information services
information sources
information systems
information utilization
innovation
instructional systems
intercommunication
knowledge transformation
linking agent
marketing
merchandising
networks
newsletters
online systems
pamphlets
publicity
publicize
research utilization
technical assistance
telecommunications
use studies

Discussion

Over fifty percent of this category's data entries show no R&D activities--i.e., zero LOE. As was stated in the discussion of Articulation, dispite the flat, low relief of these two categories, both are two of the more "trendy" groups. Only in 1978 did life "suddenly" appear within these categories.

Individual R&D is dormant while government R&D shows a bit more life than it did in Articulation. Federal R&D demonstrates a moderate, positive trend line (2.3), mildly stronger than its Articulation counterpart's trend line (2). Between 1978 ajd 1982, its LOE rises from five percent to fifteen percent.

State R&D has a mild, positive trend line (.17), but its LOE still only is equivalent to its performance in the Articulation category (five to six percent). The LOE of federal R&D is building an ever-widening gap between itself and state R&D (one percent in 1978 to nine percent in 1982). The gap developing between federal R&D and individual R&D is even wider (five percent in 1978 to fifteen percent in 1982).

Mountain Range and Foothills: Evaluation of Vocational Education Programs

Category Descriptors

(Occupational Information)

career ladders
influences
occupational information

(Job Readiness)

certification
employment potential
job performance
institutional chacteristics

job satisfaction

(Evaluation, General)

ability identification
accountability
accreditation [sic] institutional
accreditation institutions
credits
criterion referenced [sic] tests
diagnostic teaching
diagnostic tests
educational assessment
evaluation
evaluation criteria
evaluation methods
evaluation needs
feasibility studies
high school equivalency programs
informal assessment
measures individuals [sic]
minimum competency testing
performance tests
predictor variables
quality control
test bias
test construction
test construction workshops
test validity

validity

(Earnings)

salary wage [sic] differentials
wages

(Completion)

associate degrees
school holding power
student attrition

(Impact)

educational objectives
impact evaluation
outcomes of education
program effectiveness
program evaluation
program validation
research impact
school role
student participation
success
summative evaluation
teacher influence

(Studies)

follow-up studies
longitudinal studies
national surveys
vocational follow-up

(Needs Assessment)

educational needs
educational trends
futures (of society)
information needs
needs assessment
research needs
student educational objectives

(School Demography)

enrollment
enrollment influences
enrollment projections
enrollment rate
enrollment trends
school demography
statistical data
student participation

Discussion

Over fifty percent of this category's data entries fall at or below the ten percent LOE. Individual R&D's LOE represents the mountain relief, while government R&D's LOE is the foothills.

Dissertation R&D displays a mild, negative trend line (-.1). Both it and journal R&D's LOEs are "Z" shaped; off-centered relative to each other, but, increasingly drawing parallel to each other. The summits and feet of the respective "mountains" remain relatively unchanged: the summits are in the low thirty percent range (except the 1983 journal R&D LOE which is twenty-one percent), while the feet are in the teens.

Government R&D activity occurred at the foot of the mountains in the 1960's (LOE of sixteen percent), while exhibiting no activity in the early 1970s. By 1978, government R&D had moved up, forming foothills to individual R&D's mountains. State R&D displays a mild, negative trend line (-.8), while federal R&D exhibits a moderate, positive trend line (3). Relative to the lack of activity in the early 1970's, government R&D has displayed some LOE since 1978. However, relative to the 1960's, state R&D never achieved the same LOE, and federal R&D did so only in 1983.

Individual and federal R&D are on the rise. Yet, all the 1982/83 LOEs are equal to or below the LOEs of the 1960's. The concern is whether this movement is merely cyclical, especially on the part of individual R&D, or whether it reflects a more long-term increased interest? State R&D's LOE is gradually declining. Thus, increasingly, the discrepancy between the LOE's of individual R&D and federal R&D on the one hand and state R&D on the other is broadening.

High Country: Personnel

Category Descriptors

(Personnel)

administrators
allied health personnel
beginning teachers
coordinators
bilingual teacher aides
bilingual teachers
business education teachers
college faculty
competence
guidance personnel
instructional staff
leadership
paraprofessional personnel
professional personnel
school counselors
school personnel
special education teachers

- trainers
  vocational education teachers
  volunteers

  (Characteristics)

  administrative personnel
  administrator education
  administrator selection
  changing attitudes
  influences
  leadership qualities
  personnel needs
  professional reccgnition
  teacher attitudes

  (Preservice)

  competency based [sic] teacher education
  counselor training
  administrator education
  leadership training
  peer relationship
  professional continuing edcation
  professional development
  professional training
  staff development
  staff improvement
  teacher improvement
  teacher workshops

  (Evaluation)

  credentials
  personnel evaluation
  teacher certification

  (Teacher Statistics)

  teacher employment
  teacher supply and demand

Discussion

Over fifty percent of this category's data entries fall at or below the eight percent LOE. The terrain's relief is that of high country: individual R&D's mountains and their reflecting lakes with government R&D as a plateau beneath.

Dissertation R&D displays a mild, positive trend line (1.6); its twenty-year LOE is "Z" shaped. Journal R&D's LOE is "S" shaped. Each field plays mountain or reflecting lake to the other's lake/mountain. Dissertation R&D's peak LOE stands at forty-three percent in 1973; its "lake bottom" at twenty-one percent in 1978. Journal R&D's LOE bottoms in 1969 at nine percewnt; its summit stands at forty-seven percent (1978).

Government R&D stands in contrast to individual R&D's oscillations as well as its higher LOE. Government R&D represents a low-lying plateau. In the 1960's, government R&D "lived" up in the mountains with an LOE of twenty-three percent. By the 1970's, its LOE had descended to the plateau's six-to-nine percent elevation. Federal R&D ascended to the plateau from zero LOE in the early 1970's. Since the late 1970"s, the LOE of government R&D has not ventured outside the plateau's narrow range of elevation. State R&D displays a mild, positive trend line (.3); while federal R&D's trend line is mild and negative (-.4).

This category displays a long-term pattern of activity. Perusal of 1983 appears to indicate that individual R&D is poised to recreate its moderately high-LOE mountain (individual R&D)/moderate-LOE lake (journal R&D) configuration, while government R&D remains on the plateau. Individual R&D's LOE is twenty-one percent, fourteen percent above government R&D's six percent mean LOE.

Piedmont: Labor Market Supply and Demand Information

Category Descriptors

economic factors
employment opportunities
employment patterns
employment projections
employment statistics
growing and developing occupations
labor conditions
labor economics
manpower needs
occupational information
occupational mobility
social influences
social structure
underemployment

Discussion

Over fifty percent of this category's data entries show no R&D activities--i.e., zero LOE. This terrain can be characterized as piedmont. Overall, the LOE is very low except for a moderate and a larger surge by federal R&D between 1971 and 1974--an example of the shard phenomenon.

Dissertation R&D forms the "mountain backdrop" of the piedmont: for the twenty years studied, such R&D LOE rose and fell establishing a moderately negative trend line (-2) over these years. Dissertation R&D's LOE reached ten percent only once, ranging from zero LOE to four percent at the other data entry points, ending at zero percent in 1983. The LOE for journal R&D as well as for state R&D was zero for the entire twenty-year period.

Federal R&D maintained a low LOE for the twenty-year period with 1971-1974 showing both the greatest (twenty-seven percent) and the least (zero percent)

- LOE--the shard phenomenon. The LOE dropped precipitously between 1971 and 1978 from twenty-seven percent to one percent.

The only LOE in the 1980's, and it is mild, is in federal R&D. Federal R&D also displays a mildly positive trend line (1.2). The other fields all exhibit no LOE or a decline to zero LOE by 1983.

Mountains Into Plains: Students

Category Descriptors

(Student Characteristics)

achievement need
attitudes
changing attitudes
college graduates
college students
family environment
individual characteristics
influences
needs analysis student financial aid [sic]
nontraditional students
parent influence
peer influence
self supporting [sic] students
social attitudes
socioeconomic influences
student attitudes
student characteristics
student recruitment
success factors
values
work attitudes

(Achievement/Performance)

academic achievement
achievement
cognitive ability
degrees academic [sic]
educational attainment
student evaluation

Discussion

Over fifty percent of this category's data entries show no R&D activities--i.e., zero LOE. Somewhere in Isaiah, the prophet declares that mountains will be leveled into plains. The movement displayed by all the fields in this category would augur the coming fulfillment of this prophecy.

Individual R&D exhibited its greatest interest in this category in the 1960's (a

forty-seven percent LOE) with a moderate, negative trend line (-4.2) thereafter. Journal R&D parallels dissertation R&D over the twenty years studied, except at an LOE over twenty percentage points less than those displayed by dissertation R&D. By 1983, while in a definite pattern of declining LOE, dissertation R&D is still operating at a relatively "respectable" LOE of twenty-one percent, but journal R&D is displaying no activity.

Federal R&D exhibits an oscillating and mild interest in the Student category between 1963 and 1980, remaining at zero LOE more often than "venturing forth" into activities in the six to ten percent range. Since a "personal high" LOE of ten percent in 1980, federal R&D has been in a steady decline. State R&D displayed zero interest in this category for the entire twenty years studied.

While the mountains have not yet been leveled into plains, the "geological pattern" exhibited by all the fields in this category suggested a steady, if gradual, decline of interest in Student matters. R&D apparently is losing interest in the sine qua non of the educational enterprise.

Trail-Breaking: Curriculum Development

Category Descriptors

(Content)

career education

college curriculum

emerging occupations

marine biology
nuclear physics
physical sciences
science careers
veterinary medicine

competency based [sic] education
job analysis
job skills
skill analysis
skill development
skills
task analysis
V-TECS

(Basics)

arithmetic
art education
basic skills
communication skills
interpersonal competence
mathemathics

mathematics education
mathematics instruction
technical writing
values education
visual arts
writing skills

bilingual education

(Agriculture)

agribusiness
agricultural education
agricultural occupations
agricultural skills
conservation education
farm management
farm occupations
fisheries
land use
plant identification
veterinary medicine
vocational agriculture
water resources

(Business, Marketing and Management)

accounting
bookkeeping
business administration
business education
business skills
clerical occupations
clerical workers
computer literacy
computer science
computer science education
data processing
distributive education
electronic data processing
entrepreneurship
finance occupations
management development
management education
managerial occupations
marketing
merchandising
office occupations
office occupations education
secretaries
supervisory training

(Health Occupations)

allied health

allied health occupations education
community health services
dental assistants
health occupations
health occupations education
health programs
health services
nurses aides [sic]
paramedical occupations
physicians assistants
veterinary medicine

(Home Economics)

child care occupations
child care workers
clothing instruction
consumer education
cooking instruction
cooks
daily living skills
family life [sic] education
fashion industry
food service
home economics
home economics education
homemaking education
leisure time
money management
textile arts
textiles instruction

(Industrial)

auto mechanics
building maintenance mechanics program (BMMP)
building trades
carpenters
chemical technicians
communications
community development
construction (process)
craftsmen
custodial training
data processing
drafting
electrical occupations
electricity
electronics
electronic technicians
energy
energy conservation
engineering technology
engines
environmental technicians

graphic arts
housing industry
human services
industrial arts
industrial education
machine repairers
machine repairmen
maintenance
masonry
metal industry
metal working
metal working [sic] occupations
photocomposition
plastics
plumbing
police
printing
public service occupations
public works
publishing industry
rail transportation
refrigeration mechanics
safety education
skilled occupations
social workers
social services
solar radiation
steel industry
technical education
technical occupations
technology
trade and industrial education
waste disposal
welding
woodworking

(Occupational Adaptation)

job skills
occupational clusters
occupational mobility
skill analysis
transfer of training
transferable skills

(Curriculum Integration)

arithmetic
art education
basic skills
communication skills
interpersonal competence
mathemathics
mathematics education
mathematics instruction

, technical writing
values education
writing skills

(Curriculum Evaluation)

academic standards
curriculum evaluation
standards
state standards
time on task [sic]

Discussion

Over fifty percent of this category's data entries fall at or below the twenty-five percent LOE. While, overall, this category is in an obvious decline of effort, several of the fields appear to be still vital; idiosyncratic trail-breaking seems to be occurring.

Dissertation R&D displays a strong, negative trend line (-7.8) and the highest initial LOE of any field for any year in any category (sixty-seven percent). Through the early 1970's, journal R&D's LOE runs parallel to, but lower than the LOE of dissertation R&D by eight (1973) to twenty-three (1963) percent. In 1978, the two fields diverge, journal R&D dropping from fourteen percent LOE to zero LOE while dissertation R&D increases from twenty-three percent LOE in 1973 to thirty-eight percent. However, by 1983, the two fields are one percentage point apart, journal R&D's LOE having risen to twenty-five percent while dissertation R&D's LOE dropped to twenty-four percent.

Government R&D started below individual R&D's efforts in this category (low to mid-twenty percent range). However, individual R&D's effort dropped to government R&D's range by the late 1960's. The shard phenomenon occurred in 1971 and 1974 for federal R&D, increasing this field's LOE for the two years above the other fields' for those two years. By 1978, individual R&D had diverged as described in the previous paragraph while government R&D was operating at LOEs slightly above the 1970's levels (mid-twenty to thirty percent range). While individual R&D's two fields were converging in the late 1970's and 1980's, government R&D's two fields were diverging at moderately strong rates: a trend line of 3.1 for state R&D and -4.4 for federal R&D.

Three LOE trails emerge by the study period's conclusion: state R&D is on the rise, operating in the mid-forty percent range (next to dissertation R&D's initial LOE, the highest LOE in this category); individual R&D is operating in the mid-twenty percent range, dissertation R&D (its LOE in decline) demonstrating decidely less interest in the area than journal R&D (its LOE on the rise); and federal R&D is in a strong decline, operating at an LOE of ten percent.

River Bank: Special Populations

Category Descriptors

(Women)

employed women
females
womens [sic] education
working women

(Disadvantaged)

disadvantaged
disadvantaged groups
disadvantaged youth
economically disadvantaged
economic disadvantagement
low achievers
low income group
low income groups
minority group children
minority groups
special needs populations
special needs subpopulations
welfare recipients

(Handicapped)

deinstitutionalization of disabled
developmental disabilities
disabilities
educable mentally handicapped
exceptional child education
handicapped
handicapped children
handicapped students
institutionalized persons
mainstreaming
mentally handicapped
moderate mental retardation
normalization handicapped
psychiatric hospitals
psychosis
rehabilitation programs
residential institutions
severe disabilities
severe mental retardation
special needs populations
special needs subpopulations
trainable mentally handicapped
vocational rehabilitation

(Adults)

adult counseling
adults
adult students
adult vocational education
displaced homemakers

inplant programs
middle aged [sic] adults
older adults
retraining
social services
technical institutes
unemployment
vocational retraining
young adults

(Ethnic Minorities)

Alaskan natives
American Indian Education
American Indians
Asian Americans
Blacks
Chinese Americans
Cubans
ethnic groups
Indochinese
Mexican Americans
migrant education
minority group children
minority groups
Puerto Ricans
reservation American Indians
social problems
Spanish Americans
Spanish speaking

(Incarcerated)

correctional education
correctional rehabilitation
corrective institutions
prisoners
recidivism

(Gifted/Talented)

academically gifted
gifted
talented students

(Limited English Proficient)

bilingual education
bilingual students
interference language
Spanish speaking

(Other)

delinquents

. dropout prevention
dropout programs
dropouts
high risk youth
military personnel
out-of-school youth
truancy
underachievers
unemployed

Discussion

Over fifty percent of this category's data entries fall at or below the eleven percent LOE. The river bed was formed by individual and government R&Ds' low LOEs. The bank was formed when a spurt of activity on the part of all fields occurred in the late 1970's.

The majority of activity in the river bed resulted from individual R&D. The LOEs of dissertation R&D and journal R&D run approximately parallel to each other in the 1960's and 1970's. Journal R&D displayed a very low LOE with a top LOE of six percent, while dissertation R&D's highest LOE during this period was fourteen percent. Until the late 1970's, dissertation R&D operated at a higher LOE than journal R&D, the discrepancy between the two ranging from three percent to thirteen percent. Since the late 1970's, the LOEs of both fields have increased with journal R&D rising from five percent in 1976 to an LOE of thirty-five percent in 1978 and then sharply declining to an LOE of eighteen percent in 1983. Dissertation R&D's rise and fall was less percipitous: a rise from five percent in 1973 to twenty-three percent LOE in 1978 and a decline to twenty-one percent LOE in 1983. Thus, after 1978, the two individual R&D fields twice switched positions of dominance, ending in the same relative positions (dissertation R&D above journal R&D) they began with in 1963, with an LOE discrepancy of three percent.

Except for the 1960's and federal R&D in 1974 (the shard phenomenon), government R&D activities have operated at an LOE below individual R&D (zero LOE in the 1970's, nine to twenty percent range in the 1970's and 1980's). While, from the late 1970's on, government R&D operated at LOEs higher than at any previous time, both government R&D fields display declining LOEs after 1978: state R&D showing a mild, negative trend line (-.5) and federal R&D exhibiting a curvilinear slope, increased LOE in the late 1970's, with a percipitous decline in the 1980's.

While all the fields exhibited increased LOEs beginning in the mid-1970's, their LOEs are all in decline at the conclusion of the study period. As with the shard phenomenon, federal legislation's influence on R&D is obvious in the area of special populations: a shot in the arm in the late 1970's, a momentary buzz, then quickly declining interest on the part of the R&D establishment.

Chicago: Career Development and Guidance

Category Descriptors

- adjustment problems
  adult counseling
  ancillary services
  ancillary school services
  career awareness
  career change
  career choice
  career counseling
  career development
  career education
  career exploration
  career guidance
  career oppportunities
  career planning
  careers
  counseling
  counseling programs
  counseling services
  counselor role
  decision making
  decision making [sic] skills
  educational counseling
  educational opportunities
  elementary school counselors
  employment services
  guidance centers
  guidance counseling
  guidance personnel
  guidance programs
  guidance services
  influences
  job placement
  occupational aspiration
  occupational choice
  occupational guidance
  secondary school counselors
  self help [sic] programs
  student placement
  vocational adjustment
  vocational counseling
  vocational interests
  vocational maturity

Discussion

Over fifty percent of this category's data entries fall at or below the ten percent LOE. Nonetheless, (erratic, gradually declining) activity is evident over the entire twenty-year period of study in all the fields.

For the twenty years under study, the LOE of dissertation R&D and journal R&D move approximately parallel to each other, almost as a single line (they merge in 1978), at an LOE of less than ten percent. Dissertation R&D displays a moderate and negative trend line (-2.6).

. The 1970's were the halcyon days of government R&D: the LOE curve of federal R&D looks like Chicago's John Hancock Building, achieving one hundred percent in 1972 and 1973, while 1971 and 1974 saw an LOE in the low twenty percent range; in the early 1970's, state R&D had an LOE ranging in the low-to-middle forty percent range. By 1978, government R&D was operating at a LOE well below its prosperous times in the 1970's. Both federal R&D and state R&D displayed moderate and negative trend lines (-1.9 and -1.7, respectively), with 1978 LOEs (eighteen and seventeen percent, respectively) as the high points in the steady LOE decline evinced in the 1980's. These two fields' LOEs run more or less parallel to each other, with state R&D operating approximately four percent above federal R&D.

Dispite the precipitous drop in government R&D's fortunes since 1978, it has operated at higher LOEs than individual R&D. However, all the fields' LOEs appear intent on converging at the six percent level, all from late-1970's LOEs in the teens.

Rolling Lowland: Administration

Category Descriptors

(Financing)

educational finance
financial policy
financial support
program costs
student financial aid

(Program Management)

college administration
cost effectiveness
curriculum management systems
instructional systems
program administration
recordKeeping
state supervisors

(Planning)

microcomputers
educational planning
program planning
statewide planning
systems analysis

(Equipment and Facilities)

equipment
facilities

(Government)

- administrative agencies
  administrative policy
  educational legislation
  federal aid
  federal legislation
  federal programs
  federal regulation
  federal state [sic] relationship
  legislation
  government role
  public agencies
  resource allocation
  state aid
  state legislation
  state ofcials
  state programs
  state standards

Discussion

Over fifty percent of this category's data entries fall at or below the three percent LOE. Nonetheless, as with Career Development and Guidance (but at a less agitated level), activity is evident over the entire twenty-year period of study in all the fields: a terrain of rolling lowlands.

For the twenty years under study, the LOE of dissertation R&D and journal R&D move parallel to each other, nearly merging until 1979 when they do. Dissertation R&D displays a mild and negative trend line (-.7).

The 1960's were government R&D's high point (an LOE of twenty-one percent); and the 1970's were government R&D's low point (except for the shard phenomenon in federal R&D in 1971,[a] both federal R&D and state R&D showed zero LOE). An apparent, mild increase in interest has occurred since the mid-1970's: the LOEs of federal R&D (three to five percent range) and state R&D (seven to ten percent range) run approximately parallel to each other beginning in 1978. State R&D displays a mild and positive trend line (.03), while federal R&D's trend line is mild and negative (-.1). The discrepancy between the two LOEs runs between three and four percent, always favoring state R&D. Within the government R&D field, state R&D clearly has shown more interest in the Administration category than federal R&D.

By the 1980's, government R&D exhibits a higher LOE than individual R&D. While individual R&D displays a definite, linear decrease in LOE since 1978, reaching zero in 1983, government R&D shows a mildly increased interest, reaching a "level" LOE as expressed in government R&D's mild trend lines.

Coastal Backwaters: Demography and Equality

Categories' Descriptorss

2. In 1971, federal R&D LOE was twelve percent; it fell to zero LOE for the rest of the 1970's.

Seidman

(Demography: Urban)

poverty areas
urban areas
urban education
urban schools
urban youth

(Demography: Rural)

rural areas
rural development
rural economics
rural education
rural farm residents
rural population
rural schools
rural youth

(Equity)

access to education
civil rights
civil rights legislation
compliance legal [sic]
educational discrimination
equal education
equal opportunities (jobs)
human services
nondiscriminatory education
nontraditional occupations
nontraditional programs
sex differences
sex discrimination
sex fairness
sex role
sex stereotypes
social discrimination
sociocultural patterns
stereotypes
working parents

Discussion

Over fifty percent of these two categories' data entries show no R&D activities--i.e., zero LOE. The relief of this terrain is backwater plain with low-lying dunes. While some life is evident, the LOE is negligible (overall, in the two to three percent range). In addition, for all intents and purposes, the (uncalculated) trend lines appear to have zero slopes. All of the R&D fields display their lowest LOE in 1983. None of the R&D fields appear particularly interested in R&D in these two categories.

Rolling Lowland: Instructional Techniques

Category Descriptors

advanced placement
apprenticeship
apprenticeships
audiovisual aids
autoinstructional aids
bilingual education
cluster grouping
competency based [sic] education
computer oriented [sic] programs
cooperative education
delivery systems
educational alternatives
employment programs
experience based [sic] career education
experiential learning
games
individual development
individualized curriculum
individualized education programs
individualized instruction
individualized programs
inplant programs
interdisciplinary approach
internship programs
labor education
mentors
microcomputers
military training
minicourses
motivation
nonschool education programs
nontraditional education
on the job [sic] training
open enrollment
outreach programs
peer relationship
performance based [sic] education
remedial instruction
skill centers
student employment
summer programs
teaching methods
teaching skills
team teaching
track system education
training methods
work experience
work experience programs
work study [sic] programs
youth programs

Discussion

Over fifty percent of this category's data entries fall at or below the six percent LOE. Again, as with Career Development and Guidance, and Administration, a terrain of slightly negatively sloping, rolling lowlands presents itself.

For the twenty years under study, the LOEs of dissertation R&D and journal R&D move parallel to each other, journal R&D operating six or less percent above dissertation R&D. In 1983, dissertation R&D displays a two percent higher LOE than journal R&D (sixteen percent compared to fourteen percent). Journal R&D's LOE moves in the ten to fourteen percent range, while the LOE of dissertation R&D has a range between three and sixteen. Dissertation R&D displays a mild, positive trend line (1.6).

State R&D displayed its highest LOE in the early 1970's (an LOE ranging from twelve to fourteen percent). Before and after this period, state R&D interest in Instructional Techniques was negligible. Other than a shard phenomenon in 1974 (federal R&D's LOE rose from zero to seventeen percent), and through 1977, federal R&D showed no interest in this category. Federal R&D exhibits a mildly negative trend line (-1.4) from 1978 on. While this activity is above the earlier level, the LOE is in clear decline (from a high of thirteen percent to an LOE of seven percent).

The terrain appears easy to read. Individual R&D's LOE is on the rise; government R&D's LOE is on the decline.

In Conclusion, Filled With Doubt, the Geologist/Geographer Wonders

Just how counter to present knowledge are this study's findings? Are the study's findings artifactual or genuine?

Again I ask, "Who cares?" Before, the response was any vocational education researcher who values knowledge about the allocation and use of resources to improve the practical discipline of vocational education. But, now, I have a further concern. I believe that this study's most direct contribution to the improvement of vocational education depends upon the independence of R&D from the vicissitudes of the "Golden Rule": "S/he who has the gold, rules." Vocational education is standing at the foot of the mountain through which the Perkins Act offers a pass. To what degree does the present study offer assistance in traversing the mountain? The more dependent the traverse is upon the Perkins Act, the less direct use this study will be on this journey; the past is literally past in such a case, rather than an entree for the present into the future. Persons do not learn from history when their livelihood is beholden to the "Golden Rulers" who have, true to form, just made up new rules for the vocational education R&D game. One conclusion that can be drawn from the present study is just how diffuse and unfocused an activity R&D becomes when dependent upon the gold from a single purveyor.

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KEY TO GRAPHS

INDIVIDUAL FIELD

DISSERTATION R&D .....

JOURNAL R&D _____

GOVERNMENT FIELD

GOVERNMENT R&D ▬▬▬

STATE R&D ——— - - - - -

FEDERAL R&D ▬▬▬

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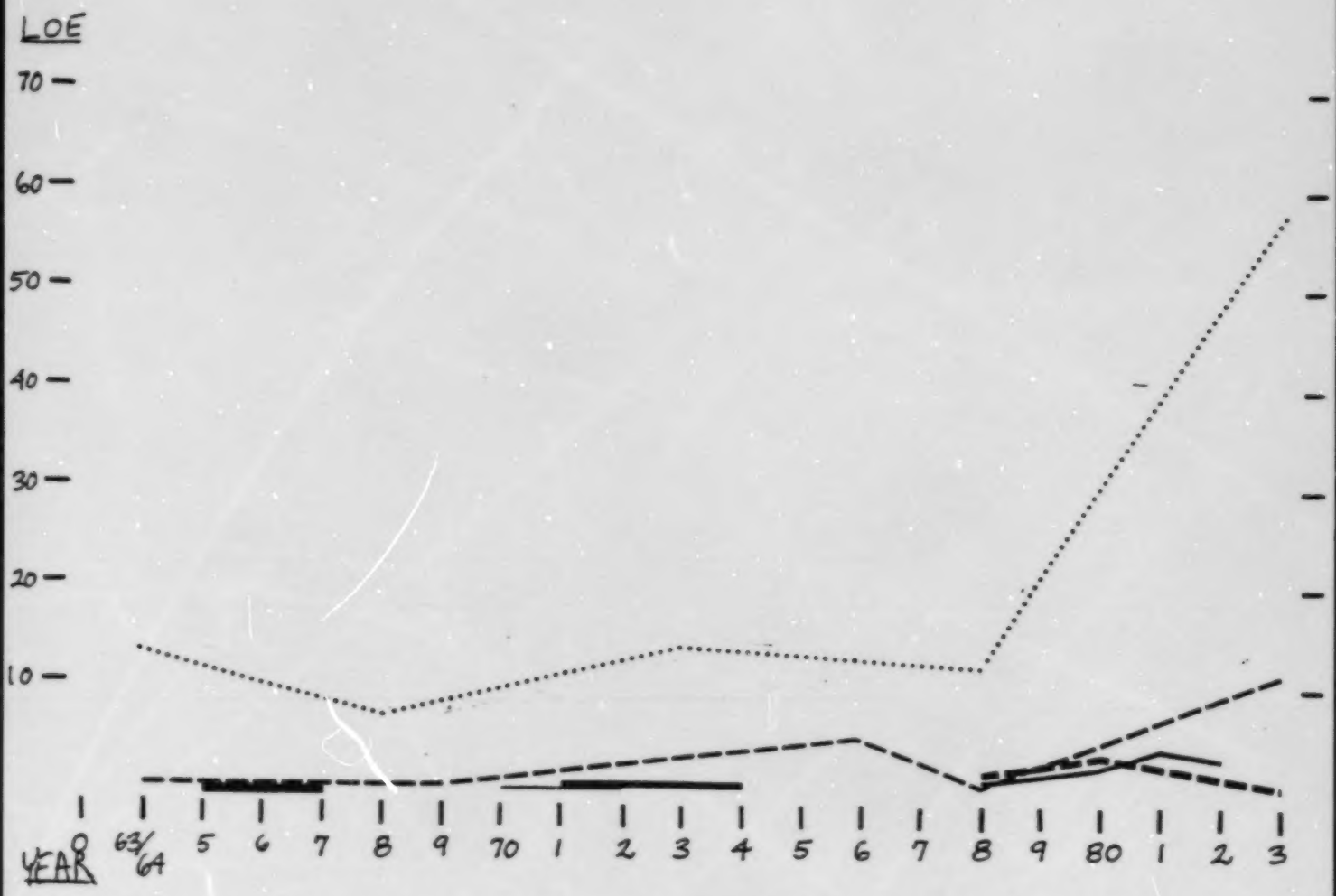
JOB SITE



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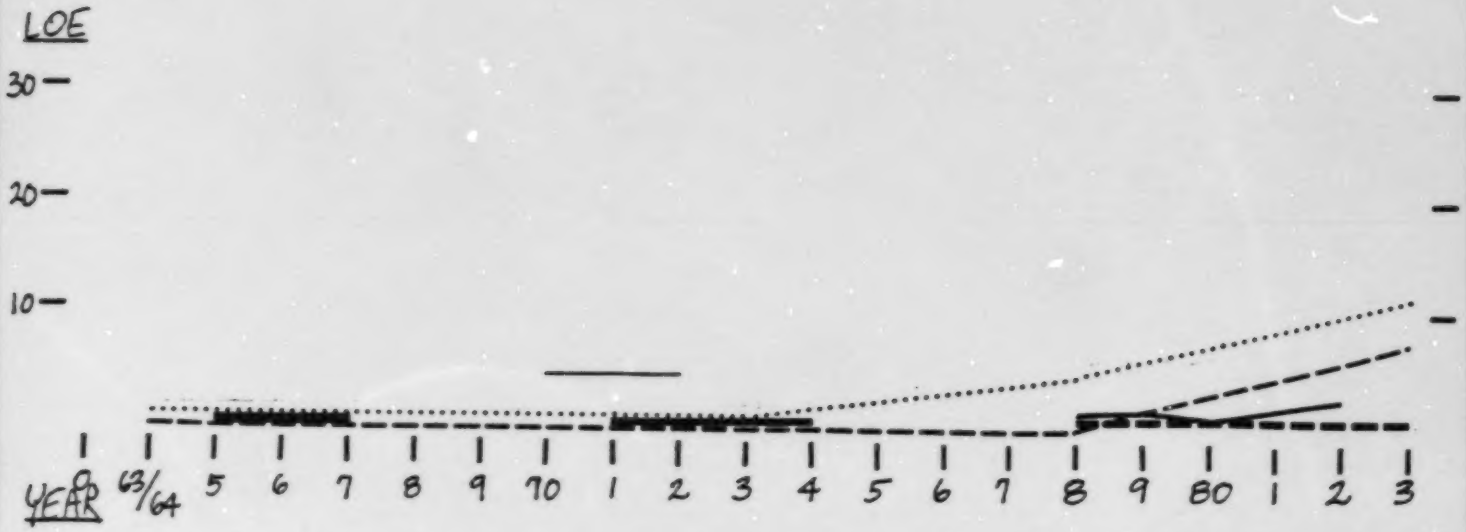

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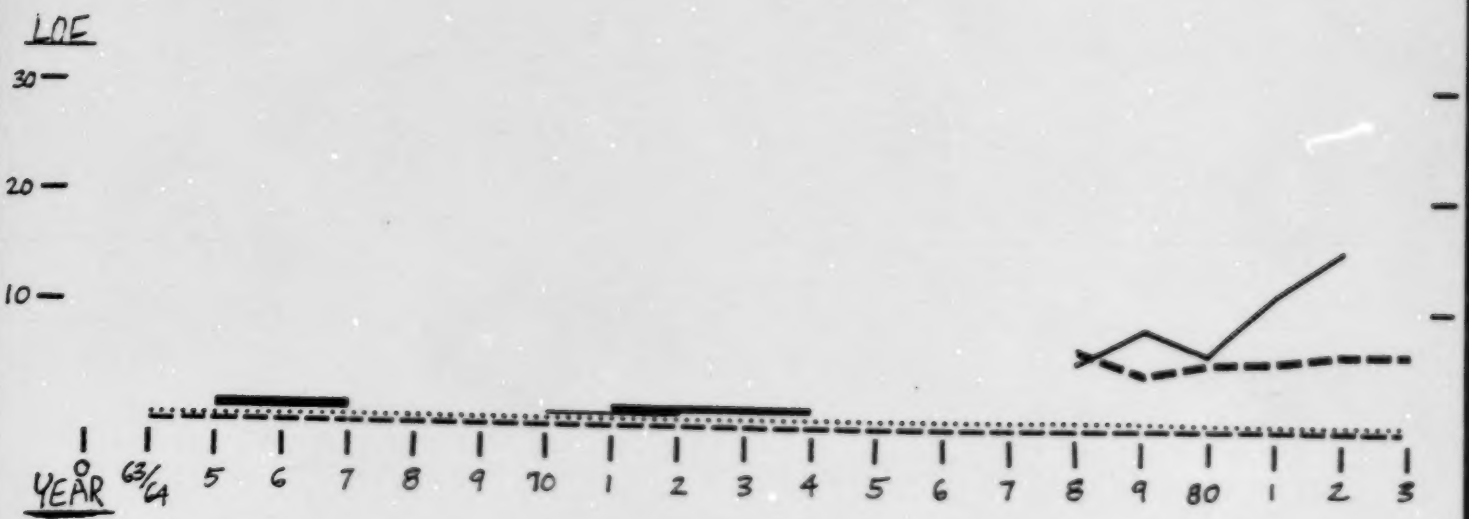
DISSEMINATION / DEMONSTRATION / CHANGE



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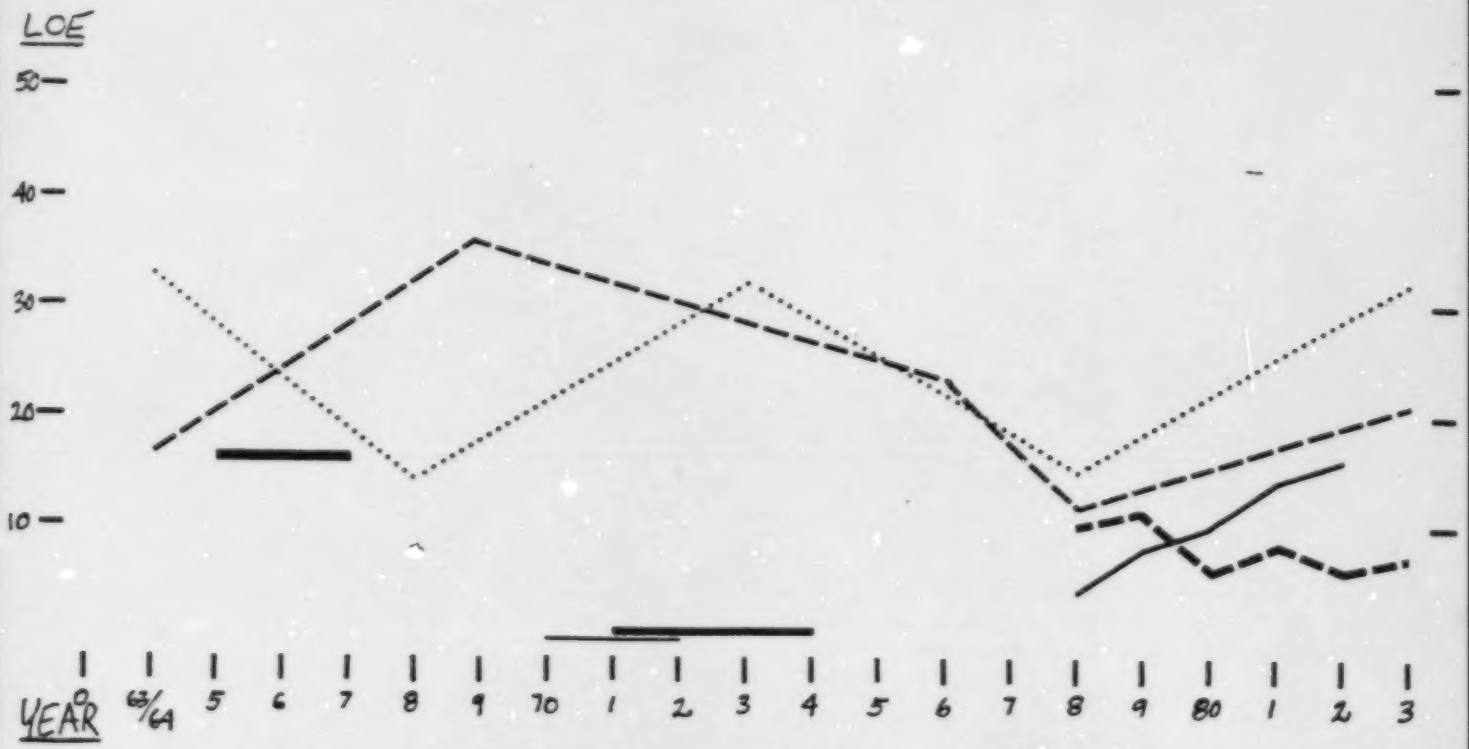
EVALUATION OF VOCATIONAL EDUCATION PROGRAMS



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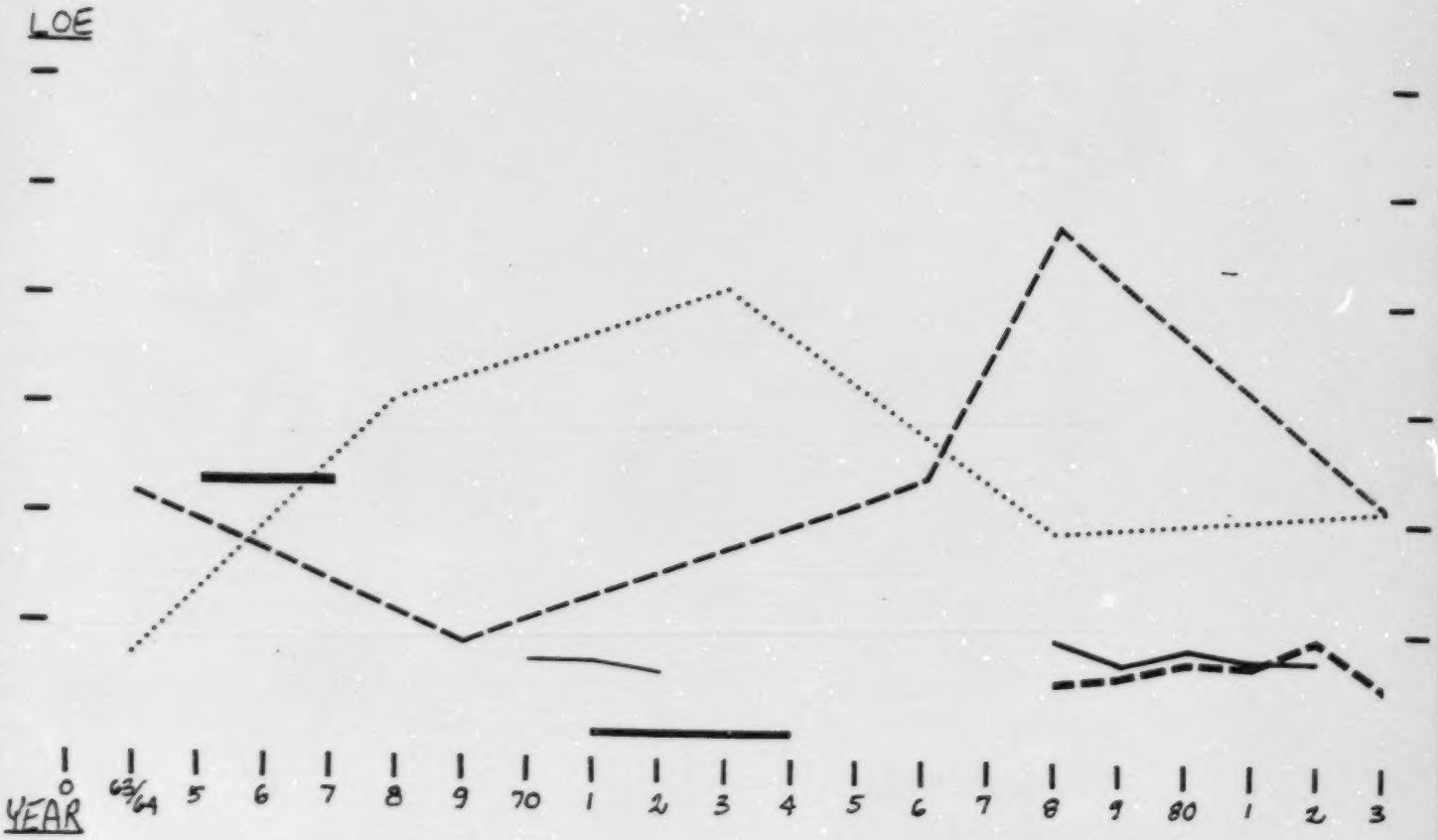
PERSONNEL



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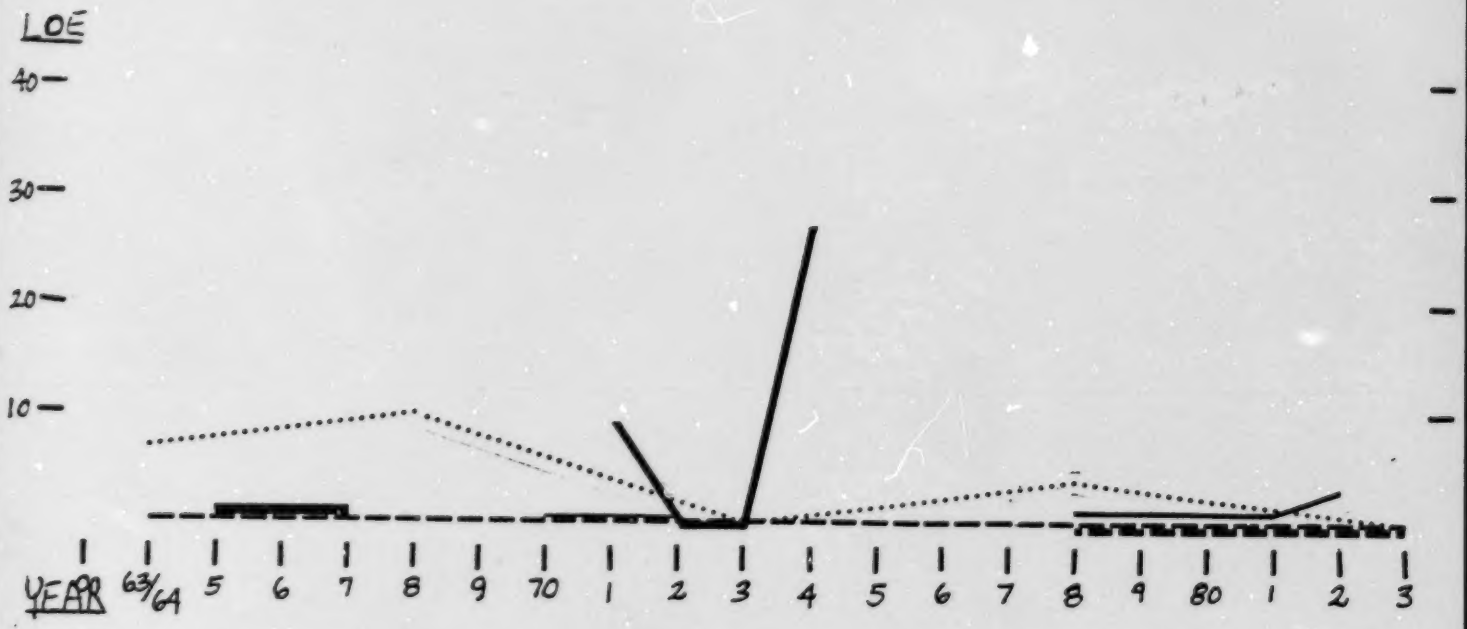
LABOR MARKET SUPPLY AND DEMAND INFORMATION



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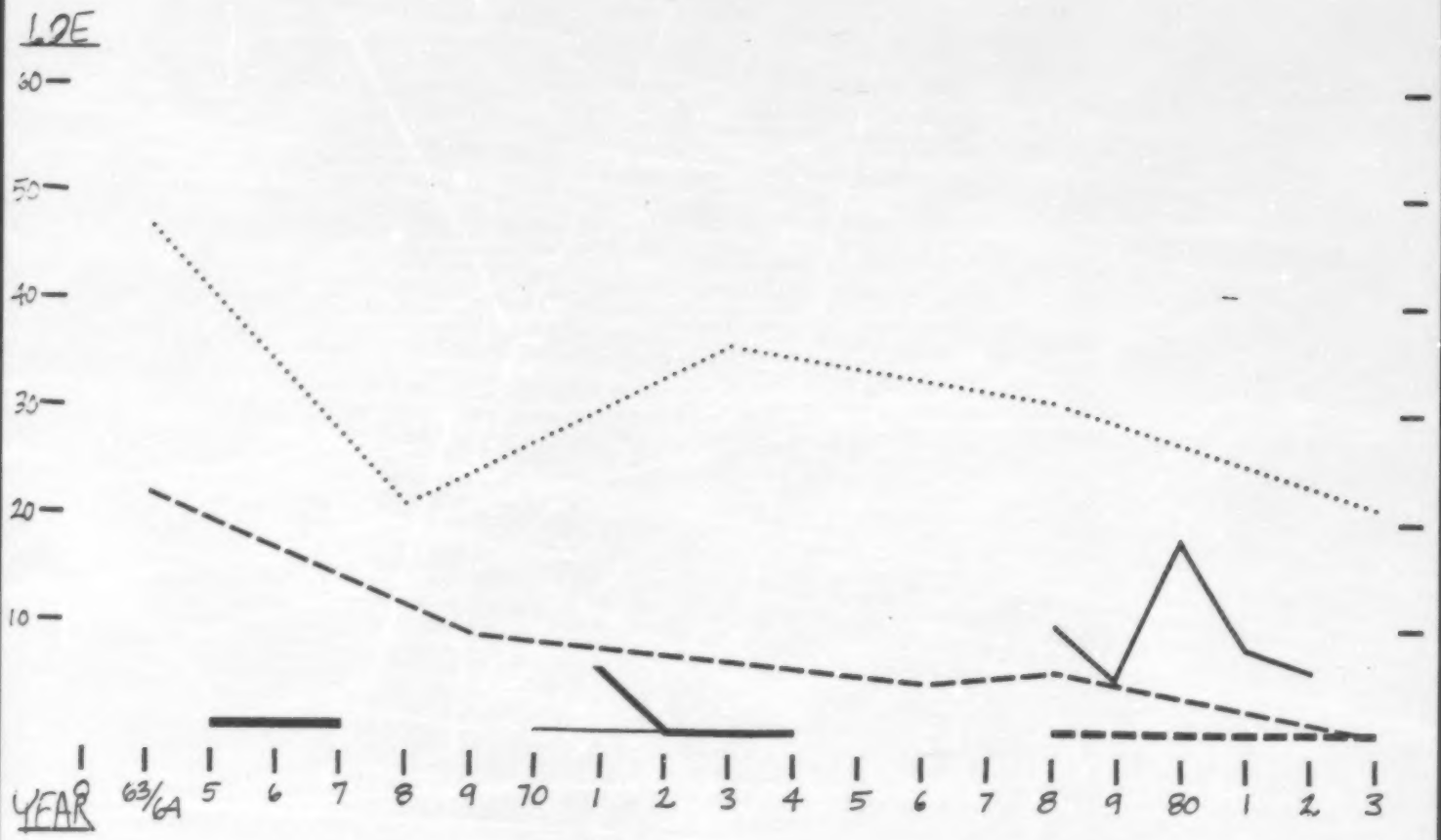
STUDENTS



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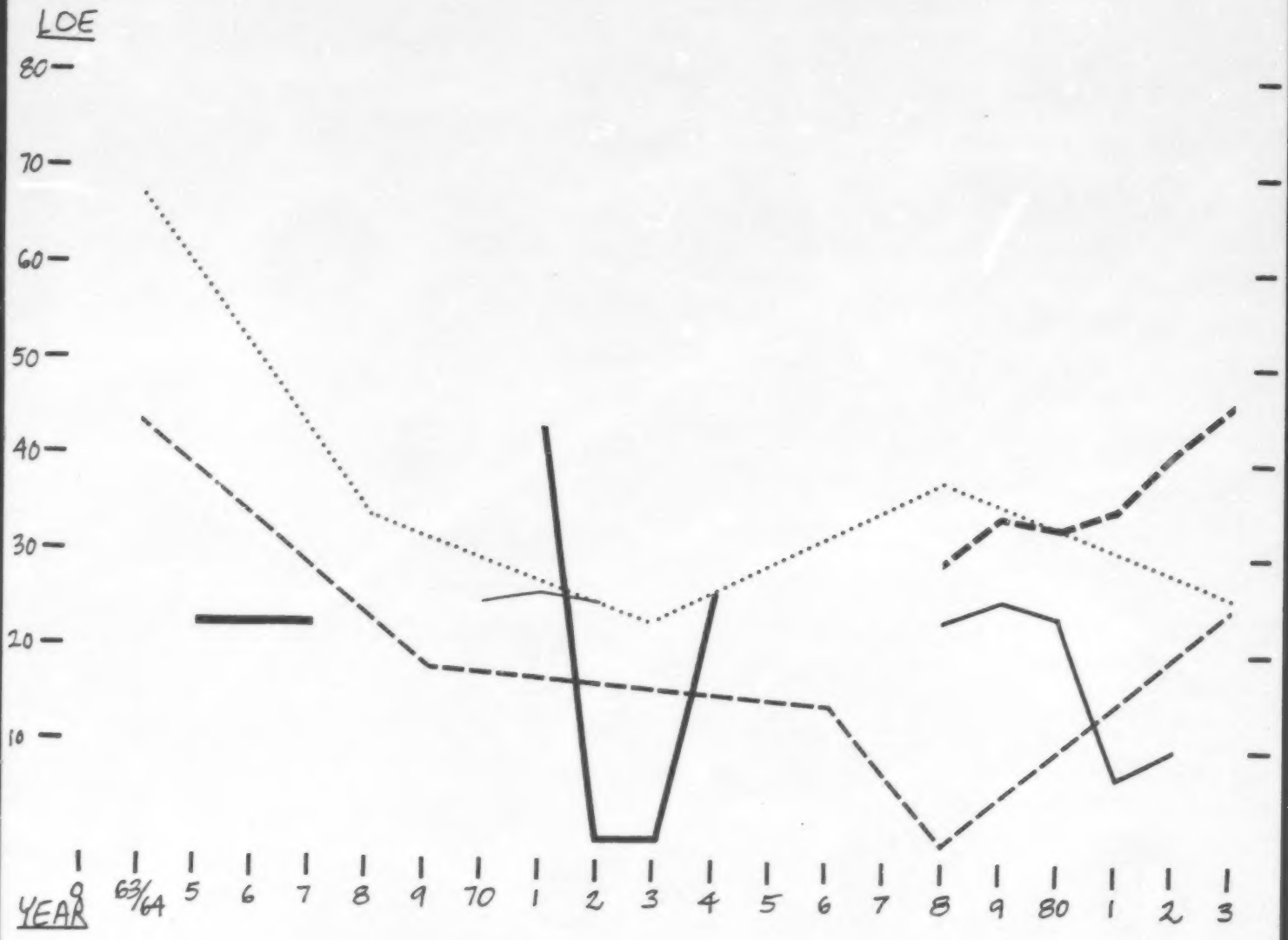
CURRICULUM DEVELOPMENT



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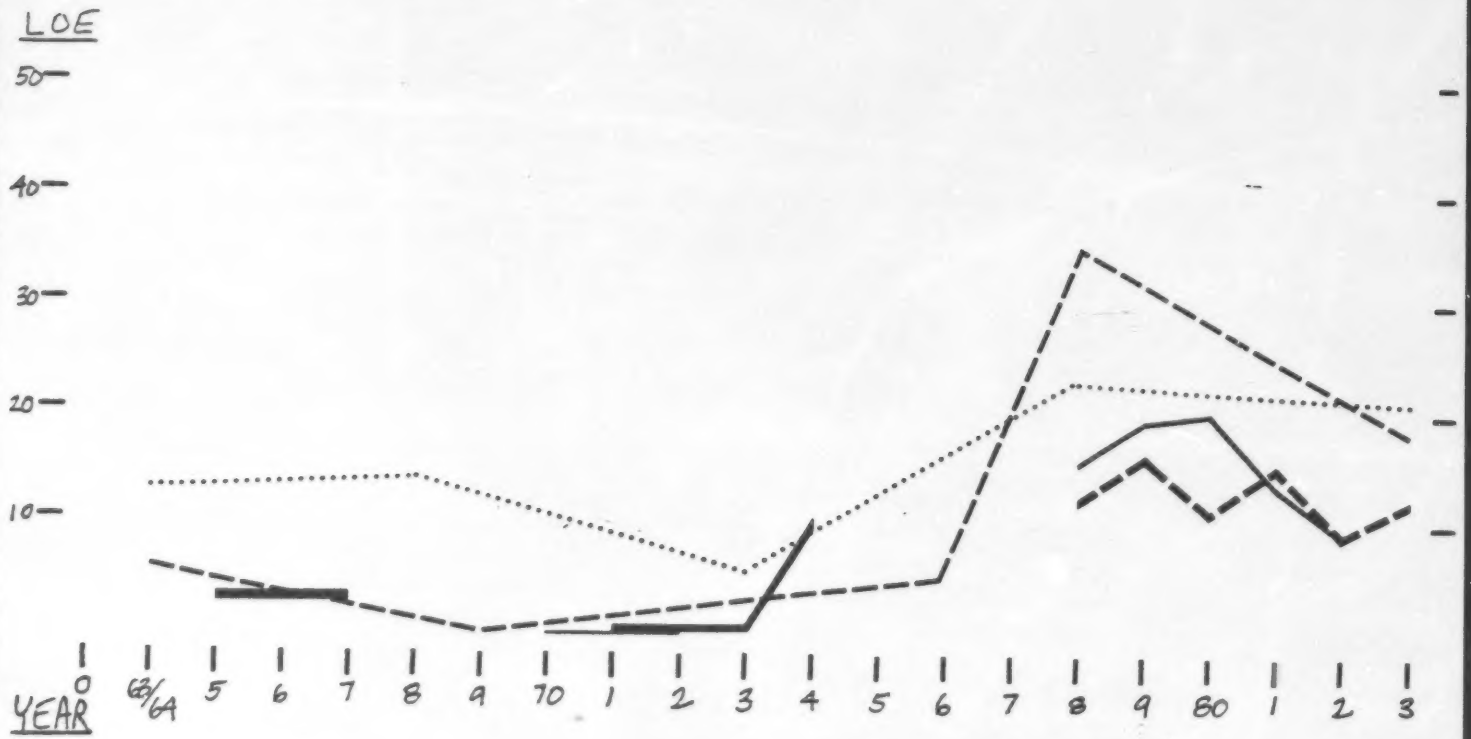
SPECIAL POPULATIONS



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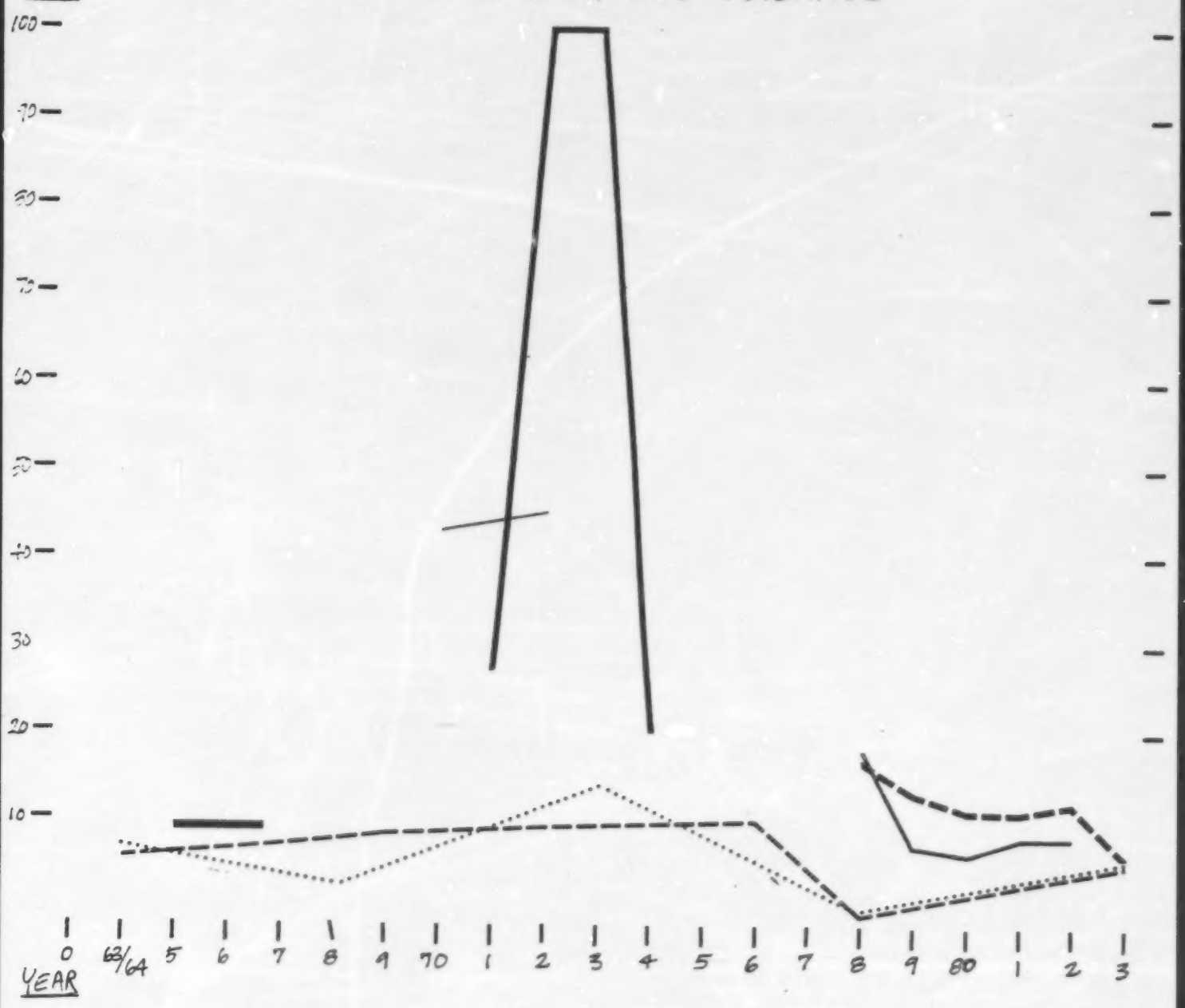
CAREER DEVELOPMENT AND GUIDANCE



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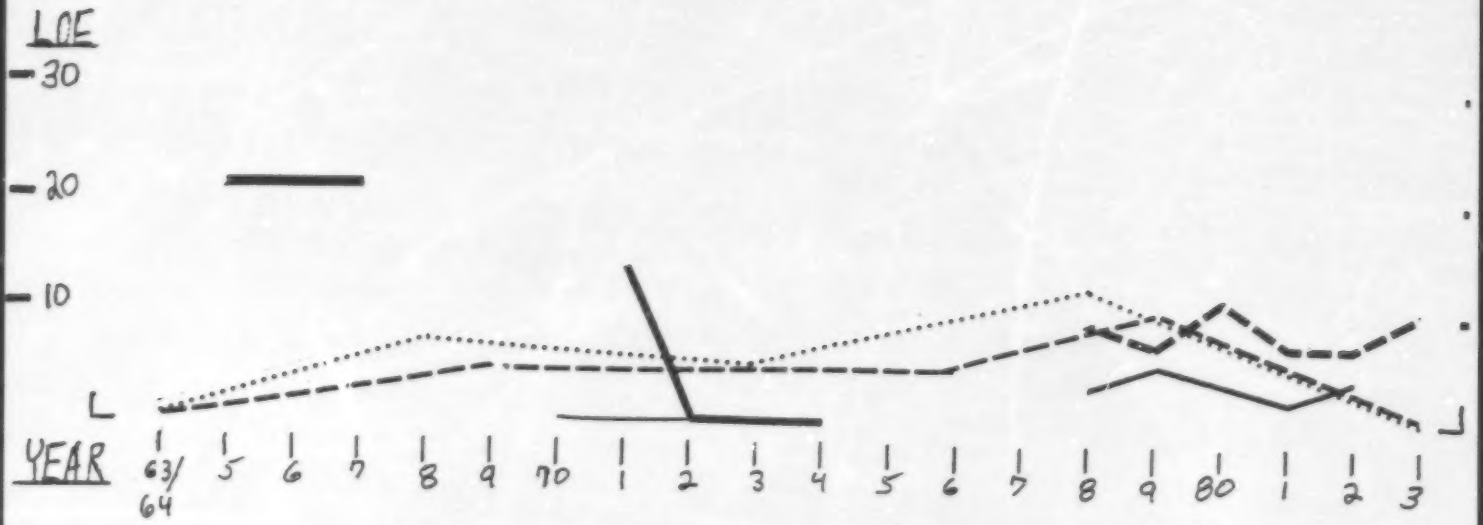
ADMINISTRATION



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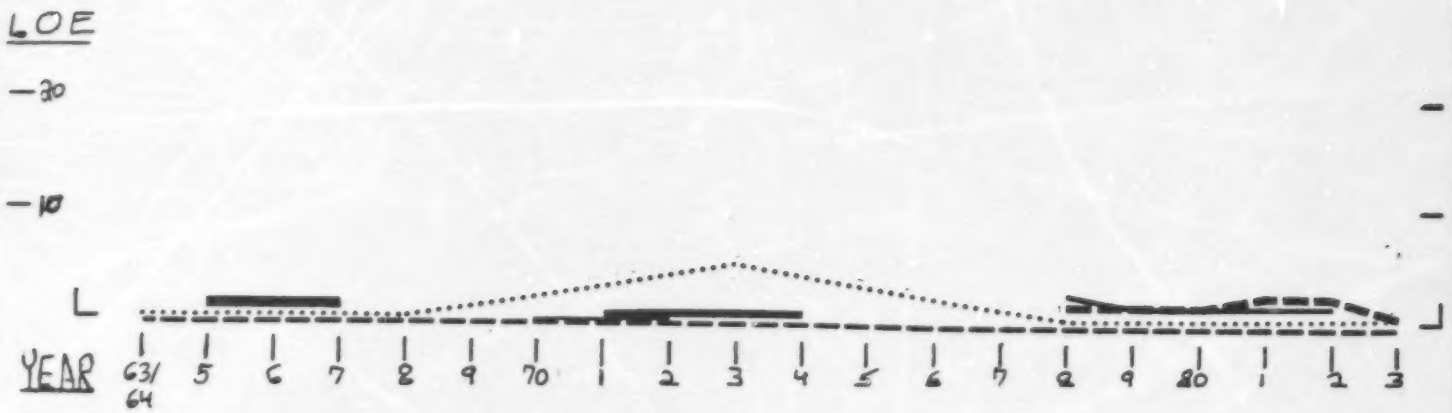
DEMOGRAPHY



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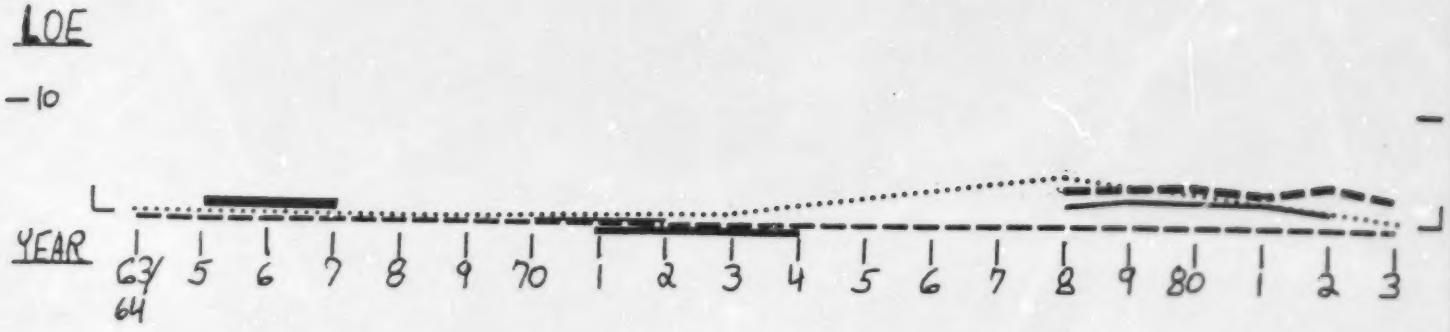
EQUITY



SEIDMAN

INSTRUCTIONAL TECHNIQUES